

REMARKS

Claims 1-20 are pending in the present application. Claims 15-18 are withdrawn from consideration, and claims 1-8, 10-14, and 19-20 are amended. Applicant respectfully requests reconsideration of the present claims in view of the above amendments and following remarks.

I. Claim Rejections Under 35 U.S.C. §102

Claim 19 is rejected under 35 U.S.C. §102(b) as being anticipated by United States Patent No. 6,157,505 to Prockup (hereinafter "Prockup"). This rejection is respectfully traversed.

As amended, claim 19 recites that a method for automatically testing a record function associated with an audio channel of an audio device across varying frequencies comprises generating a tone in digital format at a synthesizer associated with a sound card; converting the tone in digital format to an analog format; playing the analog format tone at a first frequency to a mixer of the sound card; after the analog format tone is received at the mixer of the sound card, internally looping the analog format tone through an audio channel of the sound card; converting the analog format tone to a digital format; recording the digital format tone; converting the recorded digital format tone from a time domain to a frequency domain via a Fast Fourier Transformation (FFT); comparing a frequency of the recorded digital format tone with the first frequency; and if the frequency of the recorded digital format tone is the same as the first frequency, designating the audio channel as passing a record test at a known frequency.

Prockup does not teach, suggest, or describe a method for automatically testing a record function associated with an audio channel of an audio device across varying frequencies including the features recited by claim 19. On the contrary, Prockup describes a method for analyzing the performance of a tape recorder having a playback head including generating a predetermined waveform at a signal generator; converting the waveform to an analog format, routing the analog format waveform to a record input of the tape recorder; receiving analog information made available at a playback head output of the tape recorder; converting the analog information to a digital output; and converting the digital output into digital data via a fast fourier transform.

This is not analogous to the method recited by claim 19 because Prockup fails to teach, suggest, or describe generating a tone in digital format at a synthesizer associated with a sound

card. Instead, Prockup describes that the predetermined waveform is generated at a signal generator which, in view of FIG. 2 of Prockup, is an external device that provides the analog format waveform to the tape recorder via a signal line 84 or via a transmission from a transmitter 86 of the signal generator to a receiver of the tape recorder, without teaching, suggesting or describing generating the predetermined waveform at a synthesizer associated with a sound card. In fact, Prockup is concerned with testing a tape recorder, not a sound card.

Further, Prockup fails to teach, suggest, or describe playing the analog format tone at a first frequency to a mixer of the sound card. As noted above, Prockup is concerned with testing a tape recorder, not a sound card. It follow, then, that Prockup fails to teach, suggest, or describe playing an analog format tone at a first frequency to a mixer of a sound card.

In addition, Prockup fails to teach, suggest, or describe internally looping the analog format tone through an audio channel of the sound card after the analog format tone is received at the mixer of the sound card. As previously discussed, Prockup describes routing the analog format waveform from the signal generator to a record input of the tape recorder via either a signal line extending between the signal generator and the tape recorder or via a transmission of the analog format waveform from a transmitter of the signal generator to a receiver of the tape recorder. However, neither routing the analog format waveform via the signal line nor routing the analog format waveform via a transmission between the transmitter of the signal generator and the receiver of the tape recorder as described by Prockup teaches, suggests, or describes internally looping the analog format waveform through an audio channel of a sound card after the waveform has been received at a mixer of the sound card.

For at least these reasons, claim 19 is allowable over Prockup. Therefore, Applicant respectfully requests withdrawal of this rejection.

II. Claim Rejections Under 35 U.S.C. §103

Claims 1-14 and 19-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent Application Publication No. 2002/0083419 to Li et al. (hereinafter "Li") in view of Prockup. These rejections are respectfully traversed.

A. Claims 1-14 are allowable.

As amended, claim 1 recites that a method for automatically testing audio channels of an audio device comprises generating a tone in digital format at a synthesizer associated with an audio sound card; converting the tone in digital format to an analog format; playing the analog format tone to a mixer of the audio sound card; after the analog format tone is received at the mixer of the audio sound card, internally looping the analog format tone through an audio channel of the audio sound card; converting the analog format tone to a digital format; recording the digital format tone; comparing the recorded digital format tone to the generated tone; and if the recorded digital format tone is substantially similar to the generated tone, designating the audio sound card as passing an audio test.

Li does not teach, suggest, or describe a method for automatically testing audio channels of an audio device including the features recited by claim 1. In contrast, Li describes a method for using software that emulates a signal generator including initializing a frequency and amplitude of broadcasting sound data and broadcasting the initializing sound data. Li further describes executing a recording module to record the initializing sound data given off from a sound card.

This is not analogous to the method recited by claim 1 because Li fails to teach, suggest, or describe playing the analog format tone to a mixer of the audio sound card and after the analog format tone is received at the mixer of the audio sound card, internally looping the analog format tone through an audio channel of the audio sound card. Instead, Li describes broadcasting sound data and executing a recording module to record the sound data given off from a sound card, without teaching, suggesting, or describing playing the sound data in an analog format to a mixer of the sound card, and after the analog format of the sound data is received at the mixer of the sound card, internally looping the analog format of the sound data through an audio channel of the sound card.

The Office Action notes that Li fails to explicitly “show that the first digital format tone is being converted to the analog format, loop the analog format tone, and record the analog format tone and convert the recorded analog format tone to a recorded digital format” and relies on Official Notice regarding converting a digital signal to an analog signal and then converting the analog signal to the digital signal. The Office Action does not appear to provide any reasoning regarding how it is allegedly well known in the art to internally loop the analog format

tone through an audio channel of the audio sound card as recited by claim 1. Applicant respectfully disagrees that internally looping the analog format tone through an audio channel of the audio sound card is well known and requests that the Examiner provide documentary evidence to support the allegation if Official Notice is continued to be used.

Prockup does not cure the deficiencies of Li. As discussed above, Prockup describes a method for analyzing the performance of a tape recorder having a playback head including generating a predetermined waveform at a signal generator; converting the waveform to an analog format, routing the analog format waveform to a record input of the tape recorder; receiving analog information made available at a playback head output of the tape recorder; converting the analog information to a digital output; and converting the digital output into digital data via a fast fourier transform.

This is not analogous to the method recited by claim 1 because Prockup fails to teach, suggest, or describe generating a tone in digital format at a synthesizer associated with an audio sound card. Instead, Prockup describes that the predetermined waveform is generated at a signal generator which, in view of FIG. 2 of Prockup, is an external device that provides the analog format waveform to the tape recorder via a signal line 84 or via a transmission from a transmitter 86 of the signal generator to a receiver of the tape recorder, without teaching, suggesting or describing generating the predetermined waveform at a synthesizer associated with an audio sound card. In fact, Prockup is concerned with testing a tape recorder, not a sound card.

Further, Prockup fails to teach, suggest, or describe playing the analog format tone to a mixer of the audio sound card. As noted above, Prockup is concerned with testing a tape recorder, not an audio sound card. It follow, then, that Prockup fails to teach, suggest, or describe playing an analog format tone to a mixer of an audio sound card.

In addition, Prockup fails to teach, suggest, or describe internally looping the analog format tone through an audio channel of the audio sound card after the analog format tone is received at the mixer of the audio sound card. As previously discussed, Prockup describes routing the analog format waveform from the signal generator to a record input of the tape recorder via either a signal line extending between the signal generator and the tape recorder or via a transmission of the analog format waveform from a transmitter of the signal generator to a receiver of the tape recorder. However, neither routing the analog format waveform via the signal line nor routing the analog format waveform via a transmission between the transmitter of

the signal generator and the receiver of the tape recorder as described by Prockup teaches, suggests, or describes internally looping the analog format waveform through an audio channel of an audio sound card after the waveform has been received at a mixer of the audio sound card.

Since the teaching of Li, the teaching of Prockup, and the Official Notice fail to teach, suggest, or describe the method of claim 1, claim 1 is allowable over the combined teaching of Li and Prockup as well as the Official Notice taken by the Office Action. Since claims 2-14 depend from claim 1 and recite additional features, Applicant respectfully asserts that claims 2-14 are also allowable over the combined teaching of Li and Prockup as well as the Official Notice taken by the Office Action.

Claims 2-14 are also allowable for further reasons. In particular, claim 14 recites that the method further comprises calculating a DC offset value for the recorded digital format tone; comparing the calculated DC offset value to a known acceptable DC offset value to determine whether an unacceptable level of DC offset is produced when the tone in digital format is converted to the analog format tone and is looped through the audio channel; and if the calculated DC offset value is unacceptable, designating the audio channel as failing the audio test. Neither Li, Prockup, nor the Official Notice taken teaches, suggests, or describes the method recited by claim 14. The Office Action relies on column 7, lines 59-63 of Prockup as allegedly describing the recitations of claim 14. Applicant respectfully disagrees. Column 7, lines 59-64 of Prockup are reproduced below:

FIG. 6 is composed of FIGS. 6(A) and 6(B) that respectively indicate the response of clean heads and good tapes and bad tape recording having excessive dropout. FIG. 6 has a Y-axis representative of the FFT data, at a given dBV and at a fundamental frequency of 1000 Hz, collected by the microprocessor 54. FIG. 6 also has an X-axis given in

This portion of Prockup describes that FIG. 6 of Prockup includes a graph representative of FFT at a given dBV and fundamental frequency. However, neither this portion nor any portion of Prockup teaches, suggests, or describes calculating a DC offset value for the recorded digital format tone; comparing the calculated DC offset value to a known acceptable DC offset value to determine whether an unacceptable level of DC offset is produced when the tone in digital format is converted to the analog format tone and is looped through the audio channel;

and if the calculated DC offset value is unacceptable, designating the audio channel as failing the audio test. For at least these additional reasons, claims 2-14 are allowable over the combined teaching of Li and Prockup as well as the Official Notice taken. Therefore, withdrawal of these rejections is respectfully requested.

B. Claim 19-20 are allowable.

As amended, claim 19 recites that a method for automatically testing a record function associated with an audio channel of an audio device across varying frequencies comprises generating a tone in digital format at a synthesizer associated with a sound card; converting the tone in digital format to an analog format; playing the analog format tone at a first frequency to a mixer of the sound card; after the analog format tone is received at the mixer of the sound card, internally looping the analog format tone through an audio channel of the sound card; converting the analog format tone to a digital format; recording the digital format tone; converting the recorded digital format tone from a time domain to a frequency domain via a Fast Fourier Transformation (FFT); comparing a frequency of the recorded digital format tone with the first frequency; and if the frequency of the recorded digital format tone is the same as the first frequency, designating the audio channel as passing a record test at a known frequency.

Li does not teach, suggest, or describe a method for automatically testing a record function associated with an audio channel of an audio device across varying frequencies including the features recited by claim 19. In contrast, Li describes a method for using software that emulates a signal generator including initializing a frequency and amplitude of broadcasting sound data and broadcasting the initializing sound data. Li further describes executing a recording module to record the initializing sound data given off from a sound card.

This is not analogous to the method recited by claim 19 because Li fails to teach, suggest, or describe playing the analog format tone at a first frequency to a mixer of the sound card and after the analog format tone is received at the mixer of the sound card, internally looping the analog format tone through an audio channel of the sound card. Instead, Li describes broadcasting sound data and executing a recording module to record the sound data given off from a sound card, without teaching, suggesting, or describing playing the sound data in an analog format to a mixer of the sound card, and after the analog format of the sound data is

received at the mixer of the sound card, internally looping the analog format of the sound data through an audio channel of the sound card.

The Office Action relies on the teaching of Prockup allegedly to cure the deficiencies of Li. However, like Li, Prockup does not teach, suggest, or describe a method for automatically testing a record function associated with an audio channel of an audio device across varying frequencies including the features recited by claim 19. In contrast, as discussed above, Prockup describes a method for analyzing the performance of a tape recorder having a playback head including generating a predetermined waveform at a signal generator; converting the waveform to an analog format, routing the analog format waveform to a record input of the tape recorder; receiving analog information made available at a playback head output of the tape recorder; converting the analog information to a digital output; and converting the digital output into digital data via a fast fourier transform.

This is not analogous to the method recited by claim 19 because Prockup fails to teach, suggest, or describe generating a tone in digital format at a synthesizer associated with a sound card. Instead, Prockup describes that the predetermined waveform is generated at a signal generator which, in view of FIG. 2 of Prockup, is an external device that provides the analog format waveform to the tape recorder via a signal line 84 or via a transmission from a transmitter 86 of the signal generator to a receiver of the tape recorder, without teaching, suggesting or describing generating the predetermined waveform at a synthesizer associated with a sound card. In fact, Prockup is concerned with testing a tape recorder, not a sound card.

Further, Prockup fails to teach, suggest, or describe playing the analog format tone at a first frequency to a mixer of the sound card. As noted above, Prockup is concerned with testing a tape recorder, not a sound card. It follow, then, that Prockup fails to teach, suggest, or describe playing an analog format tone at a first frequency to a mixer of a sound card.

In addition, Prockup fails to teach, suggest, or describe internally looping the analog format tone through an audio channel of the sound card after the analog format tone is received at the mixer of the sound card. As previously discussed, Prockup describes routing the analog format waveform from the signal generator to a record input of the tape recorder via either a signal line extending between the signal generator and the tape recorder or via a transmission of the analog format waveform from a transmitter of the signal generator to a receiver of the tape recorder. However, neither routing the analog format waveform via the signal line nor routing

the analog format waveform via a transmission between the transmitter of the signal generator and the receiver of the tape recorder as described by Prockup teaches, suggests, or describes internally looping the analog format waveform through an audio channel of a sound card after the waveform has been received at a mixer of the sound card.

Since the teaching of Li and the teaching of Prockup fail to teach, suggest, or describe the method of claim 19, claim 19 is allowable over the combined teaching of Li and Prockup. Since claim 20 depends from claim 19 and recites additional features, Applicant respectfully asserts that claim 20 is also allowable over the combined teaching of Li and Prockup. Accordingly, withdrawal of these rejections is respectfully requested.

CONCLUSION

In view of the foregoing amendment and remarks, Applicant respectfully submits that all of the pending claims in the present application are in condition for allowance. Reconsideration and reexamination of the application and allowance of the claims at an early date is solicited. If the Examiner has any questions or comments concerning this matter, the Examiner is invited to contact Applicant's undersigned attorney at the number below.

Respectfully submitted,

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